

WE CLAIM:

1. A gas-liquid contacting tray comprising:  
a bubble area; and,  
one or more rectangular downcomers sharing at least one boundary with the bubble area, each having a length and a width wherein the length is longer than the width, and an upper and lower end, comprising:  
two sloped downcomer walls along the length;  
a downcomer opening at tray level; and,  
one or more downward directed liquid discharge openings at its lower end;  
wherein the downcomers are so positioned on the tray that the bubble area is present along the length, wherein the cross-sectional area at the lower end of the downcomer is less than about 40% of the cross-sectional area of the upper end of the downcomer at tray level.
2. The tray of claim 1, in which the cross-sectional area at the lower end of the downcomer is between about 5 and 40% of the cross-sectional area of the upper end of the downcomer at tray level.
3. The tray of claim 2, in which the cross-sectional area at the lower end of the downcomer is between about 10 and 30% of the cross-sectional area of the upper end of the downcomer at tray level.
4. The tray of claim 1, in which the lower liquid discharge opening is formed by the elongated opening between the longitudinal lower ends of the downcomer walls.
5. The tray of claim 1, in which the rectangular downcomers are positioned parallel relative towards each other, wherein each downcomer extends from one point on the circumferential to the opposite point on the circumferential of the tray.
6. The tray of claim 1, in which the tray is divided in two tray sections by a diametrical line, each tray section provided with a row of rectangular downcomers, the downcomers arranged perpendicular to the diametrical line such that the ends of the downcomers of each tray section meet this line in an alternating fashion.
7. A column comprising a plurality of axially spaced trays with a distance of a tray space between the trays, each tray comprising:  
a bubble area; and,

one or more rectangular downcomers sharing at least one boundary with the bubble area, each having a length and a width wherein the length is longer than the width, and an upper and lower end, comprising:

two sloped downcomer walls along the length;

a downcomer opening at tray level; and,

one or more downward directed liquid discharge openings at its lower end;

wherein the downcomers are so positioned on the tray that bubble area is present along the length, wherein the cross-sectional area at the lower end of the downcomer is less than 40% of the cross-sectional area of the upper end of the downcomer at tray level.

8. The column of claim 7, in which the downcomer extends between about 50 and 90% of the tray spacing below a tray.

9. The column of claim 8, in which an inlet weir is present along a boundary of an area just below the liquid discharge openings of a tray and the corresponding bubble area.

10. The column of claim 9 in which the column comprises a distillation column or an absorption column.